

MONTHLY REPORT


OF

THE DEPARTMENT OF AGRICULTURE,

FOR

OCTOBER, 1867.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1867.



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MONTHLY REPORT.

WASHINGTON, D. C., *October, 1867.*

SIR: I beg leave respectfully to report for the month of October a brief digest of the operations of my division, with articles containing suggestions from the entomological and horticultural divisions of the department, as indicated by the following titles, viz: Condition of farm crops for October, with tables; Western wheat growing ruinous; Extracts from correspondence; American wines and wine grapes; Entomological; Is *Crotalaria* poison; Mildew on the grape; The wool prospect; Imports for seven months of 1867; Agricultural statistics of Ireland; Prices of English sheep, &c., &c.

Respectfully,

J. R. DODGE.

Hon. J. W. STOKES,

Acting Commissioner of Agriculture.

CONDITION OF FARM CROPS FOR OCTOBER.

Wheat.—Our returns for October contain local estimates of the amount of wheat yielded, in comparison with the crop of last year. They are made with due consideration of differences in acreage, in appearance at the time of harvesting, and in condition and yield of grain in threshing. Full returns from the Pacific coast, the Territories, and from some of the youngest of the border States have not yet come in; a final, definite estimate in bushels, therefore, will not be made until the issue of the next number. The result is gratifying to the farmers of the nation, and to consumers of flour generally. While few localities have exhibited large yields per acre, and some have caused comparative disappointment by an average product less than was confidently expected at harvesting, the sum total in bushels will exceed that of any harvest hitherto gathered in this country. It will surmount the figures of last year by forty to fifty millions; but will not reach the amount which should have been attained, upon the ratio of increase made between 1850 and 1860, by twenty millions. As an approximate estimate, upon present data, 220,000,000 to 225,000,000 bushels may be received as the crop of the entire country for 1867.

In some of the eastern States, in Texas, and Kansas, the figures scarcely equal those of last year; in Texas the reduction is fully half. In the north-western the increase is variable and moderate, as follows: Illinois, 7 per cent.; Minnesota, 8 per cent.; Michigan, 13; Iowa, 15; Wisconsin, 16. The belt of States in the Ohio valley which suffered so unusually last year, and made but four, five, six, or eight-tenths of a crop respectively, and averaged together but half a crop, have made a heavy increase upon those figures. The largest is made by Ohio, 130 per cent., as might be expected, the deficiency having been greatest there; Indiana is placed at 85 per cent. increase, West Virginia, 51; Kentucky, 38. In the Atlantic States, the greatest deficiency last year was in Pennsylvania, and the increase there this year is 57 per cent.

The southern States show a material enlargement in the area of wheat, from an evident intention to become more nearly self-supporting and independent than formerly. This is particularly noticeable in Virginia, Georgia, Alabama, Tennessee, and Arkansas. The great decline in Texas results from several causes, one of which is the neglected and weedy condition of lands which formerly yielded good crops. Our correspondent there writes that it has been continued in his region for five years; that "up to that date the prairie farms were almost entirely harvest fields yielding from 15 to 25 bushels per acre, and now the average yield is about $4\frac{1}{2}$ bushels per acre. The causes are no doubt various, some of which can be overcome, such as proper preparation of the land and selections of early seed from the northern climates. All are convinced that the usual mode of seeding on foul land and bad ploughing will not do, and are now acting upon the belief."

The quality of wheat is greatly superior to that of last year; it is almost universally sound and dry, but in many localities there may be found from a third to a half deficient in weight, lacking in plumpness or slightly shrivelled, and passing as No. 2, being less than 58 pounds to the bushel. There is also a greater tendency to cleanliness and care in preparing the grain for the market. High prices and the marked discriminations of buyers are doing good service in this direction.

Oats.—The yield of oats has proved less than was expected in Maine, Vermont, New York, Virginia, Mississippi, Texas, Tennessee, and Kentucky; in Michigan no increase over last year is reported, but most of the western States have made a comparative gain. As in the case of corn and wheat, the majority of the southern States added to their area in oats, and have a larger product. The quality and yield are a fair average in Ohio, Indiana, and Illinois; in Wisconsin, Minnesota, and Iowa, they are generally of superior quality and have threshed out very satisfactorily. The aggregate estimate will exceed 280,000,000 bushels—about three per cent. above that of 1866.

Rye.—This grain has made a very uniform growth and yielded an average product, with few exceptions. The report indicates a larger total product than last year, and the quality is uniform in most of the States. Those which show a slight depreciation are Maine, New Hampshire, Vermont, Rhode Island, Delaware, Virginia, Tennessee, and Nebraska. In the southern States the crop is generally good. The estimate for all the States excepting those on the Pacific is 21,900,000 bushels. This is an increase of four per cent. over the product of last year.

Barley.—The barley crop is slightly deficient—about a half million bushels, or four per cent. as compared with the crop of last year. Illinois, Kansas, Pennsylvania, New York, and all of the eastern States except Massachusetts and Connecticut, share in the deficiency. New York being the principal grower, producing nearly forty per cent. of the crop, a deficiency there of thirteen per cent. is equivalent to half a million bushels. The comparative losses and gains of all the other States together will balance each other.

Beans and Peas.—The pea crop is one of some importance in the south, costing little for labor, and furnishing valuable aid in fattening domestic animals, particularly hogs. It is gratifying to observe that this interest has not been forgotten. In Georgia an increase of 35 per cent. is reported; in Alabama, 13 per cent.; and in South Carolina, 8 per cent. Texas, Tennessee, and Maryland, report an average. A slight deficiency is indicated in Mississippi, 30 per cent. in Louisiana, 25 in Florida. The bean crop in New England is slightly deficient, except in Vermont; in Virginia and Kentucky, and in most of the West, so far as it is cultivated, it has proved better than an average crop.

Corn.—The final exhibit of the corn crop will be tabulated in November. West Virginia, Kentucky, Ohio, Indiana and Illinois, a belt which suffered last year by the winter-killing of wheat, were affected by a drought of considerable severity, which will cause a heavy reduction of the general aggregate. The

tenor of the reports for this district differ little from those of September. To offset this deficiency in part, an increase, ranging from 7 to 17 per cent., is reported for the States of Michigan, Wisconsin, Minnesota, Iowa and Kansas. Delaware, Virginia, and North Carolina have small crops, and Pennsylvania is slightly deficient. The States further north and east have generally shown a slight increase, and the southern States have made a comparatively heavy increase. The quality is uniformly good, leaving no doubt that the value of the entire crop, after deducting the deficiency in the Ohio valley, and allowing for an increase in almost all the other States, will be greater, not only in cash but in the intrinsic life-sustaining and pork-producing power, than that of last year. As the deficiency occurs in the centre of the commercial pork-packing district, it will affect unduly the market, both for corn and pork, making the scarcity more prominent, while the comparative abundance of the South will greatly reduce the demand upon the West. At the end of another season it will be shown that there was corn enough for pork, for beef, and a larger quantity of whiskey than the government will be able to collect the tax upon.

Sorghum.—The sorghum interest has greatly declined. Frosts have injured the crop in many places, the acreage is much reduced, and despondency is evident in the feelings of many growers. It is to be hoped that greater success will be enjoyed next year, as the quality of the sirup is yearly improving.

Buckwheat.—This crop will scarcely equal that of last year. East and north of Pennsylvania there is a deficiency, varying from 3 to 9 per cent. There is no deficit in Delaware, Maryland, Missouri, Iowa, Kansas and Nebraska. In Ohio the decrease is reported at 29 per cent., Indiana 17, Illinois 9, Michigan 6 per cent.

Potatoes.—The potato crop is a poor one this year. The heavy summer rains of the eastern coast, from Maine to Virginia, have occasioned much loss. The decline from last year is stated at 27 per cent. in New Jersey, 16 in Pennsylvania, (much more in the eastern part of the State,) 17 in Delaware, 8 in New York, 9 in Massachusetts, 17 in New Hampshire and 40 in Maine. In the West the crop has suffered in some places from drought; in others from the potato bug, the well-known 10-lined spearman.

Tobacco.—A decline in the tobacco product is indicated in the principal tobacco-growing sections. For particulars see crop tables.

Sugar.—Louisiana, the only State producing cane sugar to any extent, reports an increase of 20 per cent. over the small yield of last year.

Cotton.—Complete estimates will be made on the receipt of the November returns. The returns of October indicate a considerable increase in South Carolina, Georgia, and Alabama; about the same yield as last year in Mississippi, Arkansas, and Tennessee, and a marked diminution in Texas and Louisiana. All estimates below 2,000,000 bales of 400 pounds are decidedly fallacious, while present indications favor an approximation to 2,500,000 bales.

Fattening cattle.—There appears to be a small deficiency of fattening cattle in Kentucky, Ohio, Indiana and Illinois, the centre of eastern supplies. Further west and northwest, the supply is generally quite as good as last year. In those States that report a reduced supply, there is also a reduction in condition; in all of the other States the reports upon condition are quite favorable.

Old wheat.—A glance at the table will show a reduction as compared with last year, when the old stock was also small. The stock of old wheat has not been reduced so low for many years, if ever.

Table showing the condition of the crops, &c., on the first day of October, 1867

STATES.	WHEAT.		OATS.		RYE.		BARLEY.	
	Average amount of crop compared with 1866.	Average quality compared with 1866.	Average amount of crop compared with 1866.	Average quality compared with 1866.	Average amount of crop compared with 1866.	Average quality compared with 1866.	Average amount of crop compared with 1866.	Average quality compared with 1866.
Maine	9.4	9.6	7.8	8.3	9.9	9.8	8.4	11
New Hampshire	9.8	9.7	10.4	9	9.1	9.8	10.2	10
Vermont	11.4	10.3	9.3	9.2	9.5	9.9	9.8	10.4
Massachusetts	10.8	11	10.5	10.3	11	10.9	10	10
Rhode Island	10	10	10	8.5	10.5	9	10	9
Connecticut	10.5	10.3	10.5	9.8	12	11	10.1	10
New York	11	10.8	9	9.3	10.2	10.3	8.7	9.8
New Jersey	11.8	11.2	10.2	9	10.6	10.2	10.7	10.3
Pennsylvania	15.7	11.4	10.9	10.5	10.4	10.3	9.9	10.2
Delaware	10	7.7	11.7	9.3	7.7	7.7	5	5
Maryland	12.4	11	10.8	10.4	11	11.3	10	10
Virginia	15.5	11	9.2	9.3	11	9.5	9.5	9.7
North Carolina	12	10.8	11.8	12.2	10.5	10.3	13	11.7
South Carolina	14.5	11.4	12	11	10.6	10.4	10	10
Georgia	18	11.5	12.5	10.5	11.1	10.4	11	10.5
Florida	10	12.5	8.5	5.5	6	6.5	.....	.....
Alabama	14.5	11.6	12	10.4	9.8	10.5	9.1	10.3
Mississippi	9.3	9.8	8.9	9.4	9.3	10	9	10
Louisiana .....	.....	.....	.....	.....	.....	.....	15	10
Texas	4.3	9	7.5	10.5	8.2	10.1	6.8	9.5
Arkansas	14.9	11.5	12.7	11	10	10.2	10	10
Tennessee	15.1	10.4	8.9	8.8	10.3	9.7	10.2	10
West Virginia	15.1	11.1	10.4	10.1	11.1	10.3	11.5	10.7
Kentucky	13.8	10.9	9.1	9	11.3	10.5	11.6	10.3
Missouri	14	11	12.5	10.5	10.5	10.6	10.1	10.2
Illinois	10.7	11.2	10.7	10.7	9.6	10.3	9.6	10.7
Indiana	18.5	11.5	11	10.5	11.5	10.4	10.2	10.4
Ohio	23	12.5	10.5	10.2	12.5	10.6	11	10
Michigan	11.3	11	9.7	10	10.8	10.2	10	9.9
Wisconsin	11.6	12.5	12	11.6	10.3	10.2	10.4	11
Minnesota	10.8	11.8	11.9	11.6	10.4	10.6	10.2	10.2
Iowa	11.5	11	10.3	11.1	9.8	10.4	10.2	10.5
Kansas	9.6	9.3	11.8	10.5	9.6	9.9	9.6	10.6
Nebraska	11	8.7	10	9.5	9	9.2	8	9

Condition of the crops, &c., on the first day of October, 1867—Continued.

STATES.	BEANS.	PEAS.		CORN.	SOR- GHUM.	BUCK- WHEAT	POTA- TOES.	TO- BACCO.
	Condition of crop October 1.	Acreage compared with 1866.	Condition of the same.	Condition of the crop October 1.	Condition of the crop October 1.	Condition of the crop October 1.	Condition of the crop October 1.	Condition of the crop October 1.
Maine	9.3	9.8	9.2	9.8	-----	9.3	6	-----
New Hampshire	9.5	9.5	9	10.8	-----	10	7.3	-----
Vermont	10.4	9.8	10	10.5	-----	9.2	8.1	10
Massachusetts	8.7	10.8	9.8	10	9	9.4	7.1	9
Rhode Island	9	10	10	9.5	-----	10	8.5	-----
Connecticut	9.2	8.5	10	10.3	9.2	9.1	7.3	8.7
New York	10.1	9.7	10	10.7	9.9	9.7	9.2	9.8
New Jersey	10.6	9.7	10	10.5	10	9.5	7.3	10
Pennsylvania	10.5	9.6	9.7	9.8	9	9.3	8.4	9.8
Delaware	10.3	10	10	7.3	8.5	10.7	8.3	-----
Maryland	10.3	10.2	10.7	10.1	9.8	10.1	9.1	9.7
Virginia	9.5	9.5	9.6	9	9	8	9	9.6
North Carolina	10.5	8	8.7	8.8	10	9.5	10	10.2
South Carolina	10.5	10.8	12.9	14.6	8.8	10	13.1	12.5
Georgia	11.8	13.5	10.5	17.5	10.5	7.7	11	12.5
Florida	4	7.5	8.5	14.5	7	-----	12.2	10
Alabama	11	11.3	12.1	16.4	9.8	10	10.3	8.5
Mississippi	9.7	9.4	12.3	15.3	8.5	-----	11.7	8.5
Louisiana	-----	7	10	13.5	12	-----	11.5	-----
Texas	10.3	10	10.5	13	10.5	-----	10.3	10
Arkansas	13.5	11	10	12	10	15.5	9.5	9.5
Tennessee	10.4	10.1	10.1	10.7	10.4	9	8.6	10
West Virginia	9.4	10.6	10.6	8.8	7.1	9.1	9.1	9.3
Kentucky	9	9.6	9.9	7.4	8.3	8	8.1	7.5
Missouri	10.2	10.7	9.9	10.5	8.5	10.1	10.1	9.7
Illinois	9.9	10.2	10	9.2	8.2	9.1	8	9.2
Indiana	10.5	10	10	9.1	7.3	8.3	8.2	9.2
Ohio	10	9.8	9.9	8	6	7.1	9	7.1
Michigan	10.6	10.8	10.9	10.7	8.7	9.4	9.8	9.6
Wisconsin	11.5	10.6	10.1	11	9.9	9.6	9.8	10.6
Minnesota	10.5	10.2	10.2	11.5	9.4	8.9	9.9	10.8
Iowa	10.2	10.4	10	11.1	10.3	10.2	9.8	9.7
Kansas	10.3	10.8	10.1	11.7	11.2	11	13.2	9.5
Nebraska	9.8	10.3	9.5	10.1	10.2	10	9.9	10.1

Condition of the crops, &c., on the first day of October, 1867—Continued.

STATES.	SUGAR-CANE. (Not sorghum.)		COTTON.	FATTENING CATTLE.		OLD WHEAT.
	Condition of crop October 1.	Average proportion of crop lost by floods.	Condition of crop October 1.	Average number of fattening cattle compared with 1866.	Average condition of same.	Average amount of old wheat compared with 1866.
Maine				9.3	10.2	10
New Hampshire				9.8	10.6	9
Vermont				10.1	10.1	7.9
Massachusetts				9	10.5	8
Rhode Island				9.5	11	10
Connecticut				9.8	10.3	9
New York				9.8	10	7.7
New Jersey				10	10	7.5
Pennsylvania				10.2	10	6.5
Delaware				10	11.3	8.3
Maryland				11.4	11.7	10.5
Virginia			5	10.5	10	10
North Carolina			9.5	10	10	8.1
South Carolina	10	10	14.2	8.9	11	8.6
Georgia	10.5	9	15	10.7	11	15
Florida	11.2	12	8.4	11	10.5	-----
Alabama	10	10	12	9.8	11.1	9
Mississippi	10	10	10.5	9.3	11.5	6.9
Louisiana	12		5.3	13	12.5	-----
Texas			7	10.8	11	4.5
Arkansas	10	10	10	13.5	12	9
Tennessee			10.2	11.4	10.4	9.1
West Virginia			10	11.2	9.9	10.4
Kentucky			8.7	8.4	8.3	7.2
Missouri			10.5	11	10.5	9.9
Illinois			9.5	9.3	9	7.4
Indiana				9.5	9.4	6.3
Ohio				9	10	5
Michigan				10.6	9.9	7.3
Wisconsin				10.3	10.4	5
Minnesota				10.8	10.9	7.2
Iowa				9.8	10.1	6
Kansas			6.5	10.7	10.2	7.8
Nebraska				10.5	10.8	9
.....				9	10	5

WESTERN WHEAT CULTURE RUINOUS.

In a tour to the northwest, undertaken for the purpose of increasing and improving facilities for the collection of agricultural statistics, and for conference with professional or other intelligent agriculturists relative to department co-operation in aid of the interests and supply of the wants of that great section, the editor of this report was struck particularly with the ruinous tendency of the present system (or want of system) of wheat culture. A few suggestions on this point will be hazarded.

In what respect ruinous? In impoverishment of the soil, in deterioration of seed, in overrunning the country with weeds, in promoting a false and wasting system of political economy. These are serious charges, but they are made in good faith, can be easily substantiated, and will be acknowledged just by thousands of western wheat growers.

The prevalent mode of operating involves first a partial breaking of the soil, rendering sowing irregular in position and depth, and drilling difficult and imperfect, giving weeds quite as good a chance as the wheat. The next year a superficial, hasty ploughing partially covers the stubble, and very slightly the tangle of weeds, and wheat is again put in. Year after year wheat follows wheat and weeds increase, while the yield of grain diminishes, partially from loss of certain elements of the soil and partly because weeds have usurped a large area of the fields. In the mean time, as if to increase the loss from the wheat necessarily carried away, the straw by millions of tons, worth almost as much per ton for feeding as the marsh or prairie hay of the country, is burned nightly in harvest time till the sky is bright with a continued holocaust of greenbacks in straw; and the excuse for thus dissipating in thin air, not only elements of nutrition, but valuable elements of fertilization, is that the way may be clear for the plough to scratch over again the maltreated soil. This picture may not be verified in every wheat field of the west, but who will deny its striking likeness in most cases?

Is proof of impoverishment wanted? One witness only is needed—the soil itself. First, thirty bushels per acre is the boast of the farmer; then the yield drops to twenty-five, to twenty, to fifteen, and finally to ten and eight. Minnesota claimed twenty-two bushels average a few years ago, (some of her enthusiastic friends made it twenty-seven.) but she will scarcely average this year twelve, and will never again make twenty-two under her present mode of farming. To be sure, there are excuses. The seasons do not suit as formerly, blight or rust comes, or the fly invades, but all these things are evidences of exhaustion, and prey upon the soil in proportion to its deterioration. Yet in comparatively new soils the depreciation is caused by excess of weeds through careless culture more than by actual loss of fertility.

The same causes that deplete the soil produce degeneracy in the seed, which perpetuates weakness and imperfection, reducing the yield so rapidly that new seed must be obtained at once or all profit must be foregone. A careful selection of seed should every year be practiced, and new seed used after successful test. It is as easy to improve seed by special care as it is to injure it by this special neglect, and he who will undertake such improvement wisely as a business, will make a fortune and prove a public benefactor.

The weed nuisance is stupendous, destroying annually tens of millions of bushels of wheat. They have obtained a strong foothold. The evil is a radical one, and can only be cured by being torn up by the roots, which can never be done without a more thorough and careful system of culture. The average yield of wheat in England is stated at twenty-eight bushels per acre, never less than twenty-six, unless in a year of unusually bad harvests. The average in this country is less than half of the lowest of these figures. Why is it? Certainly not because our soil is poorer than theirs, neither because our climate is so much

worse for wheat culture. It is mainly for want of a suitable rotation of crops, of a more careful husbandry of resources of fertilization, of a more thorough and careful culture.

A fourth aspect of the case presents a no less ruinous feature. A false system of political economy is fostered. In the northwest wheat culture is a parody upon the cotton culture of years past. It is running one production into excess, and ignoring all others. Northwestern cultivators are scarcely farmers, they are wheat growers. Cattle are high in price, horses very high, milk is scarce and butter sometimes unknown, while straw stacks are burning and the wheat at the mercy of speculators and the railroads, and bringing high prices only under the curse of God upon foreign wheat fields, and when foreign nations are in danger of famine, and even then but a moiety of the supply comes from this country. Exchanged for a thousand other needed things at exorbitant prices, the wheat brings little, so improvements are ignored and wheat fields extended, until by and by, the soil exhausted or given up to weeds, they will share the fate of cotton fields, leaving the land poor, the owner poorer, and a pioneer in some more distant west.

A dependence on grain growing for exportation has ever been a fallacy in this country and ever will be; has ever proved and ever will a curse to our agriculture. We want more grain and we want it all eaten in this country; we want the wheat-eaters among the wheat-growers; we want cloth-makers among wool-growers; we want in the west tenfold greater variety in agricultural, manufacturing and mechanical industry; then twenty-five bushels per acre will bring two dollars per bushel, and the railroads will be employed in more profitable business than carrying wheat for shipment to Europe.

A more blind, senseless, and suicidal system of agriculture was never invented than that pictured above, and we ask wheat growers if they do not recognize the picture as altogether too real to pass as a caricature.

EXTRACTS FROM CORRESPONDENCE.

LARGE INCREASE OF WHEAT.

The correspondent of the department in Albemarle county, North Carolina, Dr. F. J. Kron, reports a remarkable instance of thin seeding, at the rate of less than four quarts to the acre, with a result exceeding the average yield of the entire country:

"The Boughton (Tappahannock) wheat, (two quarts,) sent to Albemarle in November last, could not be put in the ground until the last of the month. Sowed on high, dry land, a gravelly clay slate, without manure, it made seven bushels (120 quarts to one) on a little over half an acre of ground, and this notwithstanding the scab and much wet after harvest. The wheat weighed 62½ pounds to the bushel. No wheat ever grown here was known to tiller so much; as many as fifty heads sprang from one seed. The straw was taller and stronger and the heads much larger than common; some heads yielded upwards of sixty grains. This section of country will be greatly indebted to the department for the distribution of choice cereals."

Apprehensive that there might be a mistake in the figures, a letter of inquiry was sent to the experimenter for the purpose of drawing forth an explanation, in answer to which the following was received: "Your query in relation to the Boughton wheat, experimented with in Albemarle, has just come to hand, and I hasten to reply that our reason for sowing the wheat so sparsely (two quarts to a little over half an acre of ground) was precisely as you suggested; the ground was no object, but the wheat was so fine that we wanted to give it a

hance to yield abundantly. The yield was seven bushels, which some thought would have been swelled to ten had it not been for a severe storm, which laid down a large area that could not be saved. The unusual tillering and strength of straw made the wonder of all who beheld the lot where the wheat was maturing. Some late white wheat, sown in juxtaposition at the usual rate of sowing, did not begin to yield at the rate of fourteen bushels to the acre, as was the case with the Boughton wheat. Much of the seven bushels obtained has already been shared with others. One bushel I have sown myself, on good bottom land, in Montgomery county, at the rate of a quart to the acre, still experimenting with sparse sowing and anxious to increase our stock of so fine a variety for another year. We are under great obligation to the department for having given us the first start."

BOUGHTON WHEAT.

Mooresburg, Hawkins county, Tenn.—I got from the department one gallon of Tappahannock wheat. I placed it in the hands of a good farmer; the yield was 41 gallons of as fine wheat as I ever saw in England or this country. It will all be sown this fall.

A correspondent in Armstrong county, Pennsylvania, writing of the Boughton wheat, says: "It ripened July 4, and is a complete failure." He does not say in what respect it was a failure, except that it did not equal in growth of straw or length of heads other wheat planted by its side.

ARNAUTKA SPRING WHEAT.

Dubuque county, Iowa.—I received from the late Hon. I. Newton a package of spring wheat, weighing one and a half pound, called Arnautka or hard spring wheat. I drilled it in on three rods of ground, from which I harvested 51 pounds of wheat, which is about 53 bushels to the acre. It is undoubtedly a productive kind of wheat.

Le Sueur county, Minn.—Agreeable to request, I herewith transmit report of experiment with Arnautka, or hard spring wheat you had the kindness to send me February 13, 1867. There was one and three-fourths pound of the seed when sown. Sowed April 24. It grew nicely and stood up well. Harvested August 12, and when threshed yielded just fifty pounds. I think it a good kind of wheat for this climate and soil, (sandy loam,) a thing very much needed, as our seed needs changing in order that we may get full crops and a full return for our labor.

Johnson county, Nebraska.—About the 20th of April last I sowed one pint of the Arnautka spring wheat, received from the Department of Agriculture, and harvested twenty-five pounds from it. I think the wheat well adapted to this part of Nebraska.

WHITE AND RED MEDITERRANEAN WHEAT.

Hampden county, Mass.—In the fall of 1866 I received one package each of red and white Mediterranean wheat, which were sowed on 4th of October. When well up it was badly damaged by a drove of cows. It grew up again, however, and was cut on the 16th of July. When threshed out there were fifty-one pounds of the red and forty-six of the white. The former threshed easier, yielded better than the white, and is preferable for growth in the Connecticut valley. The wheat was grown upon sandy soil, and proves to be superior to the native varieties.

COTTON.

De Soto county, Miss.—The cotton crop was quite promising up to the first or middle of September, when it was attacked by the worms. The ravages of

the latter have not been so destructive in this county as is reported further south, but I estimate that the crop will be diminished twenty per cent. by them. The yield will be much better than last year, however, probably an increase of forty per cent.

Yalabusha county, Miss.—The cotton fields present a singular sight, being entirely divested of foliage. The caterpillar is the destroyer. The intervening spaces between cotton fields could be seen covered with them in the transit from one to the other. Estimates of planters differ, but I think the crop will fall ten per cent. below that of last year in this county. Had the crop been a complete success this region would have been relieved of most of its material embarrassment.

Charlton county, Georgia.—The almost continuous rains have injured cotton very much, and now the caterpillar is at work, so that I think not more than half a crop will be made in this county.

Morgan county, Georgia.—The rain has injured the cotton crop in this county. The lower matured bolls rotted, and the top crop on cotton that had not been topped shed off, but that which was topped is making a splendid crop. When cotton grows rapidly it is thought best to cut off the extreme top and throw the growth into the limbs and bolls. The top crop of cotton is the bolls formed on the limbs nearest the top.

Greene county, Georgia.—I have the best crop of cotton I have had for ten years, and will make double the quantity that I gathered last fall. It is opening more rapidly than I ever saw it and we are picking as much as 170 pounds to the hand in these old lands, the hands working pretty much as they please.

Spaulding county, Georgia.—I have been examining cotton in various fields and am well satisfied that there is more cotton upon the stalks than there has been since 1848. There is no late cotton to mature, as all the bolls are grown or nearly so.

Edgecombe county, N. C.—The breadth of land in cotton in this county this year is estimated at about one-fifth more than last season, when the crop amounted to from 16,000 to 17,000 bales. Notwithstanding the increased acreage it is thought the present crop will not quite reach that of last year. The cotton worm has appeared in several localities of the county, but so late in the season as to injure the crop very little. This worm is a new enemy here being almost entirely unknown previous to 1864, when a few appeared. In 1865 there were not enough to occasion remark. In 1866 there were more, but so late as to do no serious damage.

Union district, S. C.—Cotton is very late this year and the caterpillar has destroyed some crops. Some fields are stripped entirely of leaves. Where this was done early the half grown bolls were much injured, if not destroyed. About one-fifth of the cotton has been infected by these worms. The weather is now favorable for gathering crops.

Johnson county, Arkansas.—The caterpillars made their appearance in this county about the 12th of September, but the lateness of their appearance will permit a fair crop in the county. The loss from their depredations will be from 25 to 30 per cent., leaving a crop of from 225 to 325 pounds per acre on average lands.

Fannin county, Texas.—Little damage has yet been done to the cotton in this county by the worms and little more is apprehended. The crop will be greater than last year, as there is greater acreage and better prospects. The corn crop is probably larger than ever before in this county. The quantity of wheat is 30 per cent. less than last year, while the quality falls 20 per cent. below. The decline in our wheat crop has been very rapid for the last five years. Before that time the prairie farms were almost entirely harvest fields, yielding from 15 to 25 bushels of wheat per acre, while now the average yield is about 4½ bushels per acre. The causes are no doubt various, some of which can be

overcome by proper preparation of land and the selection of early seed from northern climates. The usual mode of seeding on foul land and bad ploughing will not do, and our farmers are acting upon that belief. The failure in wheat-raising has made an increase in corn and cotton.

LOCUSTS.

Gillespie county, Texas.—Clouds of locusts have made their appearance in this county, and are destroying fruit trees, vegetables, in short, almost everything within their reach.

FARMING IN MISSISSIPPI.

A correspondent in Marion county, Mississippi, gives the following notes on his second year's experience in the south:

This season I engaged under very nearly the same circumstances as last year, but with a much better set of hands, have used every exertion, and this day would be glad to get my original capital, some \$4,000, though I have sustained no actual loss. Farming under the present system I am satisfied will not pay, for the present at least. I will illustrate: I hire a hand for \$150 per year; he will make me at the very best four bales of cotton, and grain perhaps sufficient to clear expenses of himself and mule. I will realize perhaps \$60 per bale for the cotton, \$240, leaving \$90 per hand to meet my own expenses, pay taxes, wear of material, &c. In carrying on labor there is no time for improvement of lands.

This is an imperfect yet true picture of the present condition. Yet with all this, appearances are flattering. The climate is far more favorable than at the north. The laborer is not as much exposed, and a less amount of labor is required to accomplish the same end. For persons of limited capital who would be satisfied with small returns there certainly is every inducement. The same attention to fertilizing lands that is shown in the east would be attended with results the most satisfactory. The principal crops are—

1. *Cotton*.—This is to the south what wheat and pork are in the north, the article to bring the farmers cash.

2. *Corn*, which can be raised to advantage for home consumption; twenty bushels, per acre will be about the highest average. Many farmers who live near railroads can make one acre of cotton pay for two of corn.

3. *Wheat*.—Occasionally in this locality. It is a very uncertain crop, which, with the poor facilities for manufacture, gives but little encouragement for its cultivation.

4. *Rye* is thought to be a profitable crop. It grows very well and is of most importance as a forage in autumn and winter. If I continue I shall always have a patch of rye.

5. *Oats* are so uncertain as not to justify any attempt at cultivation.

6. *Peas* are a standard crop, will grow on the poorest land, and are available for hay, pasturage, and as a substitute for grain. No attention has been paid to grasses. There is little requirement for winter feeding; perhaps not twenty tons are raised in this county.

Why northern or eastern people are so slow to avail themselves of these great advantages I cannot imagine. They have nothing to fear. Any person coming with the proper spirit and object will be cordially received. (I am known as a rampant radical and soldier who battled them with a will, yet none the less respected for it.) Lands can be obtained at from \$2 to \$15 per acre, ready for immediate tillage. Assistance both in and out of doors is to be had without difficulty. The freedmen are industrious, quiet, and anxious for employment.

THE "MURRAIN TICK."

Chattanooga county, Georgia.—The murrain has been prevailing here to a considerable extent. But few cattle recover. A great variety of remedies are used. A strong tea of peach tree leaves receives most favor. Some say that a peculiar tick, called the murrain tick, infests the cattle. Whether the disease produces the tick or the tick the disease, others must determine. If the latter it may account for the manner it is communicated by droves to other cattle crossing the roads or running in lots where such have been.

[The tick above referred to is probably one of the effects and not the cause of the murrain, in the same manner that sickly trees are more liable to be infested with wood-boring insects than those which are sound and healthy. Parasitic insects, however, may carry contagion in many cases by crawling from diseased to healthy cattle, as it has been repeatedly stated that during the late prevalence of the rinderpest in England, instances were known where the contagion was carried from field to field by sheep, hares, rabbits, &c.]

HEAVY RAIN STORM.

Esmeralda county, Nevada.—During the showery months of July and August we have in this State occasional water-spouts or rain clouds bursting. On the 7th of August, as two teamsters were taking a boiler and engine to Columbus district, in this county, and when ten miles, about six p. m., they saw two clouds coming up from opposite directions, whereupon the men concluded to stop and dig a hole to catch some water for their cattle, they not having had any during the day. The rain commencing to fall, the five yoke of oxen were unhitched, by which time the two clouds had met and burst, and the water came rushing down the gulch from four to twenty feet deep, carrying rocks that would weigh a ton, and everything in its wild course was taken. The wagons, boiler, and engine weighing 7,000 pounds, were carried about one hundred rods and landed on the side of the gulch. The wagons were a total wreck, only one wheel being left of the two wagons. Two holes were knocked in the boiler and one of the engine bars bent, and all their provisions, blankets, &c., lost. The lightning was so constant that the boiler appeared as one sheet of fire, and after night it was light enough to count the cattle on the hills. Several of these storms occur every year, and those familiar with them are careful to get upon high ground when the clouds are seen rising. Several lives were lost in one of them in 1865.

TROPICAL PRODUCTS IN FLORIDA.

Manatee, Manatee county, Florida.—The whole citrus family grow very thrifily—mangoes, lemons, limes, shaddocks, &c. I think I never ate a real good orange until I came to South Florida. We have but few of the many varieties, but hope to get more by and by. Figs produce well, but do not grow with quite the ease that they do in the upper portion of the State or lower Georgia. The Smyrna is our best variety. Bananas produce well, but are set back in bearing by the frosts in winter unless they are grown in situations where the frost does not injure them. The guava is our staple fruit; the trees have now become acclimated so that they stand the few frosts of our winter without injury. Pineapples have been grown here, but not much effort has been made and they have almost run out, but will be renewed again. Dates grow, and one pair of trees are in bearing. Olives would do well, but have received no attention. The same may be said of the cocoa palm and the anona genus. The India tamarind is in bearing at Mr. Campbell's place on the north side of the Manatee river.

LARGE "CHESTER COUNTY WHITE" HOGS.

Mr. John Danforth, of New London, Connecticut, sends us an affidavit of several individuals relative to two Chester county white hogs, six months old, which weigh respectively 343 and 311 pounds. They affirm that "the pigs came to the Post Hill farm-house when five weeks old. At the age of eight weeks one named Beauty weighed 84; the other, Slick, 79; total, 163. On the 17th August Beauty weighed 204, Slick 200; total, 404. On the 17th day of October Beauty weighed 343, Slick 311; total together 654 pounds, making a gain of $4\frac{1}{4}$ pounds per day for the last sixty days."

THE DROUGHT IN ILLINOIS.

Richland county, Illinois.—The crop of corn will not be more than half; much of it rotted in the ground, soon after planting, and the drought has almost caused the ruin of that that did come up. The wheat sown this fall has suffered severely, as have also the fall pastures. Water for stock is very scarce.

CORN IN ILLINOIS.

De Kalb county, Illinois.—The corn crop so far as maturity is concerned is finer in quality than any previous crop for many years back; but it has been too highly estimated. In regard to our State, one of the first in the Union as a corn-growing State, the figures should not stand higher than nine, and I am not sure but eight would better represent the whole crop. With us in De Kalb county, ten compared with 1866, as regards quantity, is too high, but twelve would represent the quality as compared with last year.

DROUGHT IN INDIANA.

Ripley county, Indiana.—Our corn is but little over half a crop. We have suffered the latter part of the summer, and the fall so far with one of the most unprecedented droughts we have ever had in this county at this season of the year. No wheat sown yet. Indeed, the ground is so hard and dry that it is impossible to plough it.

CROPS IN NEBRASKA.

Ottawa county, Nebraska.—Our corn and potatoes have materially suffered during the past two months on account of the drought in this section of country. We have had but one shower or rain-storm during the last eight weeks, and then the roots of plants were not materially benefited by it. The consequence is, that late corn and potatoes are very much lessened in quantity. Still we shall have a fair crop of both. Of late, the grasshoppers have again visited our section and are depositing their eggs in vast numbers. We begin to fear that they may prove to be an annual pest to our river towns, and in fact to the entire Missouri valley.

AMERICAN WINES AND WINE GRAPES.

A recent examination of American wines and the progress of grape culture has impressed me very strongly with regard to the vast proportions and importance which this interest is assuming, the energy and intelligence with which it is being conducted, and the encouraging prospects that, in the main, have so far attended these efforts.

Notwithstanding these encouraging results it is perhaps well to keep in view that the subject is still in its infancy, and in a great measure only experimental, and if it is now desired to establish permanent excellence upon which the future value of this interest must ultimately depend, as a source of national industry and wealth, the necessity and importance of careful and systematic observations in everything relating to the subject is forcibly apparent, so that if errors exist they may at once be corrected, and their effects arrested before they have become typical, or injurious to the character of the products of this interest.

In the Old World, where there is only one species of the grape-vine, the varieties are very numerous and vary very considerably in their qualities as to hardiness, productiveness, size, flavor, &c. A distinction is also maintained between those varieties most suitable for table use and those valued for the production of wines. In America there are several species, preserving well marked distinctions both in fruit and foliage, as also, what is of much importance in their practical culture, peculiarities in their health, and freedom from diseases, as well as adaptability to certain climates and localities, qualities of great significance, but which have been almost if not entirely overlooked by the majority of those engaged in their culture.

The Catawba, one of the oldest cultivated and still one of the best varieties of the Fox family, (*Vitis Labrusca*,) has been the principal wine grape of the Atlantic States.* When it reaches thorough maturity it is pronounced a very good wine grape, but it is worthy of investigation whether the fruit ripens thoroughly in all localities where it is cultivated as a wine-producing grape. Our investigations tend to the belief that it does not develop its true wine characteristics in many localities where it is grown for this purpose, although it may reach a condition of maturity sufficient for a passable table fruit. Most of the varieties of this class require a long and favorable season to soften and break down the acid pulp of which they are largely composed; and when we take into consideration the tendency to disease, both in the foliage and fruit of this species, which still further retards growth, or hastens apparent ripening, we have ample reasons for the great variety of opinions constantly disseminated as to the value of these varieties as wine grapes, and the assumed necessity of attempting to add, by artificial means, what nature has legitimately failed to produce.

* A class of grapes that will mature under a lower degree of maximum summer temperature than the above is represented by the Clinton, a variety of the species *Vitis Cordifolia*, (Gray.) This species is comparatively free from disease, and the varieties possess other merits which would seem to point them out as worthy attention for wine grapes. It may be that none of the varieties yet produced from this family have all the requisites required, but so far as may be indicated by the percentage of sugar in the juice, the Clinton will, when grown under the same conditions of climate and soil, north of the parallel of 40° north latitude, show a heavier must, as indicated by the saccharometer test, than the juice of the Catawba, and it has no hard pulp, but it possesses too much acid for a popular wine, although good wines are recorded as having been produced from this variety.

The improvement of this species is specially worthy of attention by northern grape growers.

There is every reason to expect the origination of better varieties from seed than any yet in cultivation, and, looking to the hardiness and uniform health of the family, their adaptability to mature in high latitudes, and promise for wines, we must conclude that they have been signally overlooked.

* In these remarks on wine grapes it is to be understood that we refer to the plant as adapted to climates east of the Rocky mountains. On the western coast the wine grapes of Asia are principally planted.

With regard to the quality of wine produced by any grape, it may be taken as a general rule that the best will be secured from the most southern climatic limit in which each variety will succeed.

Although good wines have been produced from both of the species noticed, it is believed that the summer grape varieties (*Vitis Æstivalis*,) are capable of furnishing them of greatly superior quality. Taking Norton's Virginia seedling as an example of this class, we find that its northern limit of excellence ripening is much south of that required for the two formerly mentioned species and varieties; but, when properly matured, its wines are pronounced to be of first quality. There are, however, other varieties of this species still more promising, such as Lenoir, Herbemont, and Devereaux. When these are cultivated in suitable localities in the States of Virginia, North Carolina, Kentucky, Tennessee, Missouri and Arkansas, they will furnish wines that, there is every reason to expect, will be unequalled by any that can be produced from any of the other species of American grapes, and will form, it may safely be prophesied, sooner or later, a means of largely increasing the remunerative products of these States.

These distinctions of species, varieties and the climates to which they are generally adapted, must ultimately be recognized as the basis upon which American wine culture is to be established, so far as it refers to American grapes.

W. S.

ENTOMOLOGICAL.

Extracts from Correspondence.

Jackson Parish, La.—"Since the worms ate up the cotton we are visited by worms destroying the oak leaves. They strip the trees completely, and hang immense numbers from the limbs. They are large, black, ugly-looking worms, and our hogs eat them in such quantities that the meat tastes of them, and emits a very bad smell when cooked. To eradicate the taste and smell it will be necessary to pen the hogs and feed them on corn for several months."

This caterpillar is probably *Anisota (Dryocampa) senatoria*, or a variety of the same which destroys the oak foliage in the middle States, and is in turn destroyed by an ichneumon fly.

Bonaparte, Iowa.—"Have sent in a box, with ears of corn, worms supposed to be bud or heart worms, so called from their being found in corn-stalks, stems horse-weed, &c. These were eating in the soft ends of ears of corn, but are rarer than I ever saw them before. They are always solitary, feeding alone." One of the worms sent was an *Agrotis*, or cut worm, and the other *Heliothis migera*, or corn worm of the middle States. The worm mentioned as feeding on the horse-weed is probably a *Gortyna*, as they feed generally in the interior stems of various plants. It is unusual to find an *Agrotis* on corn ears, as they generally feed at the roots of plants.

Albemarle, North Carolina.—H. J. Kron, esq., gives discouraging reports about the destruction of grape vines in that region by *Ægeria polystaformis*. The larva of this insect working underground mines and destroys the vine roots, and being shielded by the bark defies the action of remedies for its extermination.

Mr. Kron states that the scuppernong alone resists the attacks of this insect, and thinks that grafting other varieties on this root is the only remedy in the infested districts.

More recently a correspondent in Cincinnati writes that a new enemy has

attacked the grape vines in that vicinity, and describes its work as similar to that of the North Carolina *Aegeria polystaeformis*. We have requested specimens to be sent to the department that they may be compared with those sent by Mr. Kron, but it is probably too late in the season to procure them this year.

If the insect has really fastened itself upon the vineyards of Ohio, it will, we fear, prove a most formidable and destructive foe, as, from its secret, underground manner of working, it may multiply and spread to an alarming extent before its existence is suspected.

T. G.

IS CROTALARIA POISON?

A correspondent writing from Burwood, California, sends seeds, leaves, and pods of crotalaria, or what is commonly called rattlebox or rattleweed, and says:

"Rattleweed grows very generally all over the State, and is said to be poisonous to animals eating it, particularly to sheep. Two of my sheep have lately died from, as I suppose, the effects of eating it. In both cases, I found in the stomach numbers of the rattleweed seeds, the contents of the stomach completely dried up and adhering, so that the inner coating came off when they were removed. The animals were sick for two or three days, acting spasmodically the first day, running at starts, and then standing perfectly still, the head stuck in the air, and they not noticing any one going near them. Next day they seemed to lose the use of their faculties and lie down, moving only by starts the head being raised all the time."

We are not aware that the common eastern species of rattlebox is poisonous but the symptoms are those usual in sheep poisoned by the *Kalmia angustifolia*, sheep laurel, or lamb-kill.

T. G.

MILDEW ON THE GRAPE.

The following original paper on this important subject, which has excited much discussion of late and developed many conflicting theories, was read by Mr. William Saunders, of this department, at the meeting of the American Pomological Society at St. Louis. Mr. S. has given many years of careful study to the subject:

"In a communication which I had the honor of submitting to this society at their meeting in 1860, the causes and effects of mildew on grapes were treated somewhat at length. Subsequent observations have only tended to confirm the views expressed at that time; it has, therefore, appeared to me unnecessary to repeat the details already embodied in your proceedings. At the same time a brief resume of what has been learned may be suggestive and useful for future reference.

"There are various forms of mildew to be seen on the leaves of the grape although for present distinction they may be divided into two classes, viz: those that make their appearance on the under surface of the leaf, and those that develop more particularly on the upper surface.

"Both classes of mildew are mainly, if not wholly, the result of atmospheric changes, more particularly those of a hygrometric character..

"The most fatal form of grape mildew is that species which attacks the under surface of the foliage, and is known by the name of leaf blight, sun scald, and blasted leaf. Its presence is first indicated by a slightly yellowish discoloration

on the upper surface of the leaf, which gradually increases until the part affected becomes brown. By turning over the leaf the fungus will be observed spreading and destroying the vitality of the tissue; the leaves ultimately wither, crumble, and drop off.

"This form of mildew appears to be produced by continued dampness, more particularly when heavy dews or occasional rains, accompanied by dull or cloudy weather, immediately follow a period of dryness and bright sunshine; it also spreads with greatest rapidity, other circumstances favorable, in positions where evaporation is least active.

"All varieties of grapes having downy foliage are more subject to this form of mildew than are those with smooth and shining leaves.

"The second general form of mildew is that seen on the upper surface of the leaves, giving them an appearance similar to having been dusted with fine flour, and which may be brushed off without any apparent marks of injury. Occasionally this will be observed on the berries in early summer, and may have some connection with the rot.

"Its effects are those of retarding growth, and the fruit, and even young shoots, in extreme cases, crack open, as is seen in the cracking of the fruit of some varieties of the pear.

"The debilitating effects of dry air and dry soil seem to render vegetation more liable to its attacks, and favorable to its extension. This form of mildew is less frequent and not so injurious on the native species of grape as that previously mentioned, and when treating on preventives the first described form will be more particularly kept in view. The rot in the berry is, perhaps, the most fatal disease in the grape, and one whose origin is yet obscure. It is undoubtedly a fungoid growth, from which fact we may deduce its origin to a disorganization of the plant, a weakened vitality, proceeding from one or various causes, either immediate or remote from its appearance.

"I purposely refrain from enumerating any of the many theories that have been promulgated regarding this disease, further than to mention that it has been reported that where it does exist, it is most persistent and fatal on plants growing in soils rich in organic matter, showing that a condition favorable to luxuriant growth of plant is favorable to the extension of this disease.

"It is also well known that, in the case of foreign grapes grown in glass structures, where all the circumstances of culture are in a great degree artificial, the rot is prevented in varieties subject to that disease by withholding water during the period of swelling and ripening of the fruit.

"It is probable that we have not yet sufficiently systematized observations on this disease to enable us to arrive at an intelligent conclusion as to its cause. Diseases of this nature are very often the result of causes affecting the plant many months previous to the visible development of the malady; therefore, reports upon the condition of the soil or atmosphere at the time of its greatest severity should not hold too prominent a place in our conclusions with reference to its origin.

"Assuming these observations to be in the main correct, we deduce from them various practical suggestions, some of which may be briefly mentioned. So far as our present knowledge extends, the constitution of the soil, either in its chemical or physical condition, or as affected in any degree by culture, exercises but little if any influence, either in promoting or preventing mildew on the leaf; but, keeping in view the supposition that mildew is the result of weakened vitality, it is within the bounds of probability that a system of special culture may be reached which will fortify the plant against injury from such attacks.

"The only preventives known are those of shelter from heavy dews or rains, either by mechanical or natural appliances, and applications of sulphur and other antidotes to the foliage. Experiments have proved that leaf blights may

be prevented by sheltering the foliage. How far expedients for this purpose can be profitably employed is a question for grape-growers to decide. The simplest form of covering is a board-covered trellis, and for amateur culture or private family use the expense of such covering is not worthy of consideration.

"It is also well known that sulphur applied occasionally during the period of growth will prevent mildew; as a simple statement this has some value, but is not sufficiently definite to enable the vine-grower to determine the extent or frequency of the applications necessary to secure a crop. Some seasons occur during which there is no necessity to apply remedies, and there is no periodic certainty in any as to when mildew may appear. Could we foresee its approach so that preventive applications might be made at the proper time, and only at that time, the practice would then be reduced to a definite system, and be proportionately valuable.

"This knowledge can be reached only by a series of exact hygrometric observations made in various grape-growing localities, under the general supervision of an experienced vegetable physiologist. It may be well to remark that the system of training hardy varieties to the top of the trellis, for the purpose of sheltering the more tender and valuable varieties below, has been suggested, and to a certain extent acted upon with favorable results. The ultimate effect of mildew is to check and retard growth, and thereby prevent proper maturity of the wood.

"For all cultural purposes it is sufficiently accurate to assume that the hardness of a grape is simply its immunity from mildew.

"When a grape is said to be too tender for our winters we may safely conclude that, in other words, it is so subject to mildew that the growth fails to reach proper maturity.

"Fruit-growers, above all others, should learn to call things by their proper names.

"I have reason to believe that all the foreign wine grapes would withstand our winters if not checked by mildew during growth. I have exposed mature growths of Black Hamburg, Muscat of Alexandria, Golden Chasselas, the Frontignan, and other foreign varieties, to a frost several degrees below zero, without being injured.

"And all of our native varieties, excepting, of course, strictly southern species, are sufficiently hardy to stand over ordinary winters if kept in health during summer. It is important to keep this in view.

"I have already remarked that downy-leaved grapes are more subject to mildew than those whose leaves are smooth. The Fox family of grapes, *Vitis labrusca*, from which most of our popular cultivated varieties have been produced—such as Isabella, Catawba, Diana, Rebecca, Concord, Iona, Ives's Seedling, &c.—are more subject both to mildew and rot than varieties of the summer grapes, *Vitis æstivalis*, or the frost grape, *Vitis cordifolia*.

"I have long since expressed my conviction that more attention should be given to the improvement of the two last named species for wine grapes than has hitherto been done.

"For northern latitudes the *Vitis cordifolia*, of which the Clinton is a familiar example, is worthy particular attention, not only on account of its intrinsic merits as a wine, and even as a table grape, but as a representative of a class of great hardihood and freedom from disease. Occasionally we may observe mildew on the Clinton, on the upper surface of the foliage, but I have never seen it to obtain sufficiently so as to materially affect growth, and rot in the berry I have never seen. The leaf of this variety is green and smooth on both surfaces.

"For more southern climates the varieties of *Vitis æstivalis* will be suitable. Among these may be mentioned Norton's Virginia Seedling, Herbemont, Lenoir and Cynthiana. These comprise some of our best wine grapes, but require a longer season to attain maturity than many of the Fox family, and will not reach

fection at the north except in favorable seasons. Some varieties of this class are also our finest table grapes. The leaf of this species is but slightly downy. One of the varieties of *Vitis labrusca* are the most useful grapes in cultivation; Concord has for many years attained a supremacy in this respect. The Es's Seedling has recently presented claims that are beginning to be acknowledged.

The Hartford Prolific is one of the earliest varieties, and largely cultivated such; but all of these are popular, simply because they are hardier than otherwise superior varieties of their class; were it not so, we should all most certainly prefer the Adirondack, the earliest of all good grapes; the Catawba, so well known for its excellent qualities; the Iowa, highest flavored in the list; the Rebecca and Maxatawny, white grapes, that, when in perfection, may be compared to a Golden Chasselas; as also several of Rogers's hybrids, which tactically may be referred to this class for their main characteristics of growth and habit.

This section of our native grapes has received more attention than any of the others; the size of the berries and fine appearance of the branches have encouraged a disposition to improvement, and many of the latter seedlings are of superior quality, but they are more subject to disease than are others of the American species. Even in their native habitats the wild fox grapes of the woods will be found suffering from the same rot and mildew so prevalent among their more civilized descendants.

And here I would remark that a wide field lies open for improving our native grapes; a field that has scarcely been trod upon. I alluded to the hybridization of the native species with each other in contradistinction to the use of the foreign grape for this purpose, which tends to perpetuate the diseases to which the foreign grape is liable in this climate. We have in the Delaware grape an example of what may be expected from this combination of American species—a hybrid between the *Vitis labrusca* and *Vitis æstivalis*.

It partakes of the tendency to leaf mildew of the former; the freedom from rot in berry of the latter, and a fruit superior to both.

Great results await us in this direction.

Place a berry, having the size and fine appearance of the Concord or the Union Village, on the bunch of Norton's Virginia Seedling, or the *Deveraux*, combining all their good qualities, and there is nothing quixotic in the expectation of realizing a fruit that will equal in its magnificent dimensions the famed grape of Syria.

With regard to the origin of fungoid diseases I have designedly refrained from expressing any emphatic opinion. This question is still a subject of inquiry with botanists, whether it is a cause or consequence of disease. My observations lead me to the conclusion that it is both. One thing, however, is certain, that fruit-growers must sooner or later recognize in fungoid growths their greatest enemy to success. As closely connected with this subject, it may not be out of place here to mention a circumstance that deeply concerns pomologists as a body. I allude to the exceedingly vague and loose, if not untruthful, expressions constantly used in the description of new grapes. I question whether, among all the numerous new varieties that have been introduced during the past fifteen years, any one of them has been described without special mention having been made of its entire exemption from mildew. It is charitable to suppose that this may be true in certain localities, but it is not the whole truth; and to presume that any one variety of fruit, grain, or vegetable esculent can be found to adapt itself equally well over a country whose climates extend from the frigid to the torrid zones, is utterly inconsistent with our knowledge of vegetable ontology."

THE WOOL PROSPECT.

An extract from a letter from Medina county, Ohio, thus queries concerning wool:

“Wool sells ruinously low, about 40 cents per pound on an average. In consequence, the farmers are not increasing their flocks, but express a desire to diminish them. Is this wise? Do you see anything in the future to encourage this branch of agriculture? I would like to see an expression of your opinion in the next monthly report.”

It is manifestly *unwise* to destroy an interest of such magnitude because circumstances, temporarily existing, have diminished its profits. It is unwise to abandon it because its enemies have been able to cripple it by excessive importation during the pendency of the question of its protection. It is an old game hitherto successful with them, first, to glut the market on the eve of the imposition of a duty, and afterwards to declare the resultant stagnation in prices to be the direct effect of the law. All the mischief has been done that can be done. The most potent element of cure is *time*, in which to consume the immense surplus of foreign wools which were thrown upon the market, primarily for the profit of evading the coming duty, incidentally for the discouragement such influx would bring upon domestic manufacture. Wool-growers who hold on must expect a gradual improvement, which will be sure to follow, unless financial disturbances unexpectedly arise. The following statement of this influx of foreign wool is from the statistical report for 1866, in the volume now in press:

“The country has been flooded with imported unmanufactured wools and woollen goods since July 1, 1865, in anticipation of an increase in the duties which was so long deferred that a ruinous displacement of domestic wools was the result. The extent of this derangement will be apparent by an exhibition of official figures of wool imports. It will be remembered that the four years of war were necessarily years of excessive importation, amounting to nearly two hundred and fifty-two millions of pounds of wool and twenty-seven millions of shoddy, and that during the last year of that period, 1865, ending three months after the close of the war and six months after such result seemed inevitable, the importation was reduced to forty millions of dutiable wool, and a little more than three millions of free wool from Canada. The reduction should have continued as we now produce about one hundred and fifteen millions, and can add twenty millions in a single year if the business promises to pay. Instead of such reduction, an enormous increase was made, not only through the fiscal year of 1865-'66, but from July to March, 1867, when the wool tariff went into effect as follows:

Years.	Dutiable.	Free.	Total.
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
1865.....	40,372,075	3,486,079	45,858,154
1866.....	67,917,031	1,206,234	69,123,265
Excess over 1865.....	.....	.....	23,265,111

“Including the shoddy, the increase was nearly twenty-six millions. The imports of the year ending June 30, 1867, were 35,325,151 pounds, costing \$5,770,083; shoddy, 5,086,187 pounds, costing \$516,480. A glut in the wool market was the result, though prices did not decline, because the wool was largely held in bond in expectation of a decrease of future importation by high duties. This was sufficient to prevent a material increase of the low current prices, compelling farmers to await patiently the consumption of these foreign supplies. Nor was this all; manufacturers, as well as farmers, were to suffer by an equally excessive importation of woollens—in fact, an unprecedented influx, *almost*

qualling in a single year the imports of woollens for the entire period of the war, the following totals will show :

Total for four years ending June 30, 1865.....	\$87, 762, 918
Annual average for four years ending June 30, 1865.....	21, 940, 729
Imports of the year ending June 30, 1866.....	57, 115, 901

“This is a sum equal to the present total valuation of the annual wool clip of the United States. The expectation of obtaining a fair price for wool will be futile until this immense stock of goods is worked off, the old army supplies exhausted, and a normal condition of supply and demand is regained.”

Of the fleeces imported in the year ending June 30, 1866, nearly all was in direct competition with our own styles of wool, and about thirty-seven million pounds from Buenos Ayres alone, twenty-five million pounds of which came in at *three cents* duty, and nearly all of it was clothing wool that displaced an equal quantity of the home product. Fine wools, imported in the dirt, came in at less than half the internal revenue taxes upon our own wool growers. The quantity at each rate was as follows :

Pounds.	Value.	Rate of duty.
32, 366, 135	\$3, 522, 417	3 cents.
35, 211, 402	5, 705, 293	6 cents.
8, 529	2, 398	10 cents and 10 per cent.
330, 965	150, 975	12 cents and 12 per cent.

Here is more than we should import in three years, at a rate of duty that was a direct discrimination in favor of foreigners equivalent to the amount of duty which they actually paid. Added to this was the import of woollens, costing in gold fifty-seven millions of dollars, and in greenbacks, with freight and commissions added, fully one hundred millions; the whole requiring as much foreign wool to produce it as the entire importation of *woollens* for *three years* of the war. Can sensible manufacturers and intelligent wool growers expect prosperity till this glut in the market is removed? That it is being removed, since the passage of the wool-tariff law, the falling off in importation shows.

The wool grower should not despair. His business incidentally enriches his farm, while wheat and corn growing impoverishes it, and he is comparatively independent of the freight monopolies which threaten to destroy all profit from bulky farm products. And the price will inevitably prove remunerative if its manufacture shall not be broken down by foreign competition.

The facts of wool and woollen importations, and the history of the woollen manufacture in this country, show that we have arrived at a period when one of two results must follow—either domestic manufactures must mainly occupy the field of domestic supply, or foreign goods will fill the markets of the country, stop the factories, depress sheep husbandry, reduce the price of wheat and other grain by decreasing the number of consumers and increasing the number of competing consumers.

The following extract from the annual report of the statistical division embodies a digest of such history :

“The aggregate importation of woollens for each decade, and the average per year for forty years, ending in 1860, are as follows :

	Aggregate.	Annual average.
Ten years ending in 1830	\$86, 182, 110	\$8, 618, 211
Ten years ending in 1840	129, 336, 258	12, 933, 625
Ten years ending in 1850	109, 023, 552	10, 902, 355
Ten years ending in 1860	282, 682, 830	28, 268, 283
Forty years ending in 1860	627, 224, 750	15, 680, 618

"In 1820, when this importation commenced, manufacturing was at its lowest ebb, the value of its annual product having been reduced to \$4,413,068, by excessive importations after the close of the war of 1812, from \$25,608,788 in 1810, just as foreign traders, aided by American importers, at the close of the late war, and the fall of gold, have seriously impaired both the wool growing and wool manufacturing interests by flooding the country with a vast surplus of foreign woollens. While suffering a series of fluctuations, caused by more or less successful efforts to break down the barriers to over-importation, the progress of manufacturing has been gradual and comparatively regular. In 1830 the product of woollen manufactures had increased to \$14,528,166; in 1840 it was \$20,696,999; in 1850, \$43,207,545; in 1860, \$68,865,963; in 1864 a return of manufacturers, representing about three-fourths of the total number of sets of machinery, made an aggregate of \$120,000,000.

"With the increase of the manufacture of wool, step by step, advanced the production of wool. The census of 1850 made the clip of that year 52,516,959 pounds; that of 1860 returned 60,511,343. The yield of 1864 was estimated at 95,000,000; that of 1866, 115,000,000. The increase of manufacturing and the relative consumption of wool at different periods may be gathered from the following statement, with the qualification that the wool importation of 1865 was less than the consumption of foreign wool for that year, while that of 1866 was far more than that year's consumption. There was also, in round numbers, four millions of pounds of shoddy in the former, and seven millions in the latter year, not counted in the statement:

	1840.	1850.	1860.	1865.	1866.
United States products...lbs..	35,802,114	52,516,969	60,511,343	105,000,000	115,000,000
Imports.....lbs..	15,006,416	18,669,794	34,586,657	40,372,075	67,917,031
Total.....	50,808,524	71,186,763	95,098,000	145,372,075	182,917,031

"It is not that woollen importations are so much heavier than formerly, in proportion to population. As shown above, the average for forty years, when we manufactured comparatively little, was \$15,680,618. With population doubled and foreign prices at least fifty per cent. greater than twenty-five years ago, \$45,000,000 would not be a larger proportionate importation. Then we manufactured scarcely half the annual consumption; now we manufacture three-fourths, and of most goods can easily manufacture for the entire demand, so that *any* importation tends to drug the market. This is the literal fact, and the future will show how sensitive a full market is to the slightest surplus—just as a few drops will overflow a brimming glass. All the woollens imported in four years of war amounted to but \$87,782,918, or \$21,945,726 annually; actually a less quantity of goods than was bought for \$15,680,618 annually for forty years, commencing in 1821; but in the mean time the products of our mills had grown from four millions of dollars in 1820, to one hundred and fifty or sixty millions in 1864!"

Articles.	January.		February.		March.		Total for three months.			
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.		
Sheep, goats, and camels' hair, and manufactures of.										
Raw and fleece.....pounds.....	1,463,692	\$284,055	2,645,994	\$458,134	3,808,402	\$620,924	7,918,088	\$1,363,113		
Cloths and cassimeres.....do.....	607,391	1,069,991	906,630	908,250	450,100	661,491	2,024,121	2,612,732		
Waste or shoddy.....do.....	680,585	65,946	490,448	68,398	524,218	53,092	1,695,251	187,436		
Shawls.....do.....		135,008		299,354		216,731		651,273		
Blankets.....pounds.....	41,398	13,936	15,586	4,102	3,981	2,946	60,965	21,004		
Dress goods.....yards.....	6,948,716	2,015,013	5,913,007	1,768,695	3,285,568	1,018,008	16,147,291	4,801,716		
Manufactures not specified.....		992,395		1,139,675		1,118,573		3,250,643		
								12,917,917		
Articles.	April.		May.		June.		July.		Total for four months.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Raw and fleece.....pounds.....	4,646,851	\$747,965	3,656,487	\$672,537	4,402,513	\$693,609	2,798,221	\$496,144	15,574,072	\$2,609,545
Cloth and cassimeres.....do.....	375,443	475,424	465,475	570,508	674,538	901,508	1,130,072	1,318,958	2,654,528	3,365,458
Woolen rags, shoddy, mungo, waste, and flecks.....do.....	223,179	23,075	85,318	13,878	29,167	3,588	50,237	5,339	387,901	45,880
Shawls.....do.....		116,585		49,252		56,718		142,921		365,459
Blankets.....pounds.....	1,239	1,299	7,160	6,529	1,480	2,561	1,708	941	11,587	11,330
Carpets.....U. S. yards.....										
Dress goods.....yards.....	2,578,078	784,369	2,908,890	819,579	3,305,953	965,886	6,404,552	1,981,794	15,197,473	4,551,628
Manufactures not specified.....		614,280		619,121		438,577		1,098,407		2,800,385
Total.....		2,762,297		2,790,374		3,062,507		5,074,507		13,689,685

AGRICULTURAL STATISTICS OF IRELAND.

The following is the official statement of the result of the annual census of Ireland, taken by the metropolitan police force:

The total acreage under all crops in 1867 was	5,458,945
The total acreage under all crops in 1866 was (revised numbers).....	5,520,568
Showing a decrease in the extent under crops in 1867 of	61,623

The crops which *diminished* in area this year are:

	Acre.	Acre.
Cereals:		
Wheat	37,282	
Oats	40,283	
Bere and rye	415	
Beans and peas	1,327	
		79,307
Green crops:		
Potatoes	48,808	
Mangel and beet	1,357	
Cabbage	12,510	
Carrots, parsnips, and other green crops	1,267	
Vetches and rape	3,924	
		67,866
Flax		10,402
Total decrease in the foregoing crops		157,575

The crops which *increased* in acreage in 1867 are:

Cereals:	
Barley	20,411
Green crops:	
Turnips	18,513
Meadow and clover	57,028
Total increase on foregoing crops	95,952
Making a <i>net</i> decrease in the area under all crops of	61,623

Compared with 1866, the area under wheat decreased by 37,282 acres, oats by 40,283 acres, bere and rye 415 acres, and beans and peas by 1,327 acres. Barley increased by 20,411 acres. In green crops the area under potatoes diminished by 48,808 acres, and cabbage 12,510 acres. Turnips increased by 18,513 acres.

The following abstracts exhibit the acreage under each crop in 1866 and 1867, and the increase or decrease in the latter year:

ABSTRACT OF CEREAL CROPS.

	1866. Acres.	1867. Acres.	Increase in 1867. Acres.	Decrease in 1867. Acres.
Wheat	299,190	261,908	.....	37,282
Oats	1,699,695	1,659,412	.....	40,283
Barley	150,293	170,704	20,411	.....
Bere and rye	10,021	9,606	.....	415
Beans and peas	14,834	13,507	.....	1,327
Total	2,174,033	2,115,137	20,411	79,307
				20,411
Decrease in cereal crops in 1867				58,896

ABSTRACT OF GREEN CROPS.

	1866.	1867.	Increase in 1867.	Decrease in 1867.
Potatoes.....	1,050,353	1,001,545	.....	48,808
Turnips.....	317,198	335,711	18,513	.....
Mangel-wurzel and beet root.....	20,162	18,805	.....	1,357
Cabbage.....	36,531	24,021	.....	12,510
Carrots, parsnips, and other green crops.....	26,738	25,471	.....	1,267
Vetches and rape.....	30,623	26,699	.....	3,924
Total.....	1,481,605	1,432,252	18,513	67,866
				18,513
Decrease in green crops in 1867				49,353

GENERAL SUMMARY OF CEREAL AND GREEN CROPS, ETC.

	Acres.
Decrease in cereal crops in 1867.....	58,896
Decrease in green crops in 1867.....	49,353
Decrease in flax in 1867.....	10,402
	118,651
Increase in meadow and clover in 1867.....	57,028
Total decrease in the extent of land under crops in 1867	61,623

From the foregoing statement it will be seen that there has been a decrease of 61,623 acres in the total area of land under crops in 1867, compared with 1866. Grass has increased by 52,828 acres, fallow by 772 acres, bog and waste (unoccupied) by 13,176 acres. Woods and plantations show a decrease of 5,153 acres.

The returns of live stock for 1867, compared with 1866, show a decrease in the number of horses of 13,451; of cattle, 43,799; and of pigs, 263,381; and an increase in the number of sheep of 551,733. This increase in sheep is spread over every county in Ireland.

The *total estimated* value of horses, cattle, sheep, and pigs, this year, was £35,095,224, being a decrease of £114,491, compared with 1866.

Mr. Donnelly here repeats the observation made when submitting the general abstracts of tillage and live stock for last year: "There is great cause for thankfulness to a merciful Providence that Ireland has hitherto been almost entirely free from the distressing ravages of the cattle plague, by which almost every county in England and Scotland has so deeply suffered;" and he concludes as follows: "I have again the pleasure to state that, with scarcely an exception, the particulars given in the returns have been readily afforded to the enumerators by the various stock-owners and occupiers of land, which I beg to say is highly creditable to their good feeling and intelligence; and I have now to repeat my respectful acknowledgments to the landed proprietors, tenant farmers, the clergy of all denominations, and to the public press, for their continued valuable assistance with reference to the collection of these statistics."

PRICES OF ENGLISH SHEEP.

Southdowns.—A large sale of this popular breed of sheep recently took place at Beddingham, England. The flock embraced nearly 700 head, and belonged to Mr. Elman, the well-known breeder of Southdowns. While the prices realized show a slight decline, the sales aggregated over \$15,000, as follows: 500 ewes at an average of \$19 84; 100 lambs at \$12 87; 25 rams at \$71 18; 15 rams at \$124 60. Five full-mouthed ewes brought \$50 each, and five \$42 50

each; five shearling ewes, \$32 50 each; five four-toothed ewes, \$26 25 each; five six-toothed ewes, \$43 75 each; five ewe lambs, \$18 75 each. The rams ranged from \$56 to \$336, and the ram lambs at from \$35 to \$301.

Shropshires. At a recent "ram-letting" at Uffington, Mr. Evans's highly-commended shearling at Bury St. Edmunds was let to Mr. Masfen for \$595. The first prize shearling from the same flock to Mr. Beach for \$420; the second prize to Mr. Horley for \$315; Mr. Mansell's prize two-shear to Mr. Smith for \$539. Lord Chisham also hired Mr. Smith's highly-commended sheep at Bury for \$280. Mr. Crane let two shearlings for \$280 and \$252 respectively. The Uffington three-shear sheep, the third prize at the royal meeting, was also said to be let for \$665. At the sale of Mr. Masfen's Shropshire sheep at Pendeford, 50 rams averaged over \$75 each, prices running as high as \$280 for the best. Seventy-five stock ewes and theaves were sold in lots of five at figures ranging from \$13 75 to \$39 25 each.

THE ENGLISH WHEAT HARVEST.

The wheat yield of England is light this year. As threshing progresses, the deficit becomes more apparent. The quality is variable, the weight running from fifty-five to sixty-four pounds, much of it under sixty pounds per bushel. The deficiency will be greater than at first supposed. The imports into London for four weeks in September were 1,318,592 bushels, against 474,840 bushels during the same time last year. The entire imports of the United Kingdom for the four weeks ending September 14, were 2,998,037 cwt. wheat, and 184,297 cwt. flour. Russia, as heretofore, furnishes the larger portion.

France will also be in the wheat market for large purchases this year. Any surplus the United States can furnish will be taken in Europe, at rates remunerative to our farmers.

THE WHEAT TRADE OF THE WORLD.

A recent French calculation gives the price of wheat per quintal in various countries and at various points, as follows: France, 35f. 59c.; Algiers, 32f.; Bona, (Algeria,) 34f. 50c.; Brussels, 38f.; Antwerp, 34f.; Bruges, 40f.; Namur, 37f.; Cologne, 34f.; Frankfort, 31f.; Rotterdam, 42f. 85c.; Geneva, 33f. 50c.; Turin, 31f.; Liverpool, 36f. 25c.; London, 37f. 75c.; St. Petersburg, 26f.; Odessa, 29f. 70c.; New York, 29f. 75c.; and Valladolid, (Spain,) 32f. 50c. The highest price would thus appear to have prevailed at Rotterdam, and the lowest at Odessa.

AMERICAN WHEAT IN ENGLAND.

Consul Geo. J. Abbot, of Sheffield, England, writes thus to this department concerning grain imports from this country: "It is stated in the Times that of the wheat importations during the month of August, amounting to 3,295,622 cwt., forty per cent. was supplied by Russia, and nineteen per cent. by Prussia. The United States stand next, our proportion being ten per cent., thus indicating a commencement of the promised revival of this branch of American trade. Last year, in July, the United States sent only 8,000 cwt., but in August of this year there were sent 337,224 cwt."

METEOROLOGY.

[Compiled in the Department of Agriculture from the reports made by the observers for the Smithsonian Institution.]

SEPTEMBER, 1867.

Table showing the highest and lowest range of the thermometer, (with dates prefixed,) the mean temperature and amount of rain, (in inches and tenths,) for September, 1867, at the following places, as given by the observers named. Daily observations were made at the hours of 7 a. m. and 2 and 9 p. m.

Stations, &c.	Counties.	Observers.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain.
MAINE.								
				°		°	°	<i>In.</i>
Steuben	Washington	J. D. Parker	19	74	19	30	55.5	2.60
Lee	Penobscot	B. H. Towle	5	74	15	34	55.1	0.05
West Waterville	Kennebec	B. F. Wilbur	4	75	30	35	58.2	0.78
Gardiner	do	R. H. Gardiner	4	69	30	38	57.1	0.97
Lisbon	Androscoggin	Asa P. Moore						0.97
Standish	Cumberland	John P. Moulton	6	77	24	36	58.4	2.13
Rumford Point	Oxford	Waldo Pettingill	6, 29	74	24	30	57.6	0.85
Cornish	York	Silas West	5	76	24	34	57.3	1.26
Cornishville	do	G. W. Guptill	20	74	30	33	58.4	0.92
Averages							57.2	1.17
NEW HAMPSHIRE.								
Stratford	Coos	Branch Brown	6	79	24	28	53.0	3.04
North Barnstead	Belknap	C. H. Pitman	2	78	30	38	61.0	0.88
Claremont	Sullivan	Arthur Chase	18	80	15	33	58.0	2.10
Averages							57.3	2.01
VERMONT.								
North Craftsbury	Orleans	Edward P. Wild	18	81	24	28	55.2	3.56
Randolph	Orange	Charles S. Paine	18	88	24	35	56.5	1.73
Middlebury	Addison	H. A. Sheldon	18	77	27	34	56.7	2.45
Averages							56.1	2.58
MASSACHUSETTS.								
Kingston	Plymouth	G. S. Newcomb	4, 6, 7, 10, 18, 19	76	30	38	61.7	3.25
Topsfield	Essex	S. A. Merriam	4	78	30	42	61.7	0.50
Lawrence	do	John Fallon	18	75	15	38	59.2	0.82
Georgetown	do	S. Augs. Nelson	2	76	24, 30	40		
Newbury	do	John H. Caldwell	13	81	24	37	59.3	
Milton	Norfolk	Rev. A. K. Teele	6, 13	78	30	38	59.6	0.50
North Billerica	Middlesex	Rev. E. Nason	18	80	24	36	60.2	
West Newton	do	John H. Bixby	2, 6, 7, 13, 18	82	30	40	61.2	1.10
New Bedford	Bristol	Samuel Rodman	7, 17	74	30	40	61.6	2.42
Worcester	Worcester	John Cotton	18	77	24, 30	40	61.2	1.97

Table showing the range of the thermometer, &c., for September—Continued.

Stations, &c.	Counties.	Observers.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain.
MASS.—Continued.								
Mendon	Worcester	J. G. Metcalf, M. D.	4, 18, 20	76	24	34	60.5	0.90
Amherst	Hampshire	Prof. E. S. Snell....	17	80	28	39	59.9	1.10
Williams College	Berkshire	Prof. A. Hopkins	18	82	24	35	59.2	1.20
Averages.....							65.9	1.53
RHODE ISLAND.								
Newport	Newport	Wm. H. Crandall....	17	88	30	40	61.1	2.30
CONNECTICUT.								
Pomfret	Windham	Rev. D. Hunt	18	75	30	38	58.7	0.77
Columbia.....	Tolland	Wm. H. Yeomans	17	94	30	36	63.8	.....
Middletown	Middlesex	Pf.J. & W.A. Johnston	17	85	24	39	62.8	2.83
Groton	New London	Rev. E. Dewhurst	17	86	24	44	55.6	2.22
Averages.....							60.2	1.94
NEW YORK.								
Moriches	Suffolk	E.A. Smith & daugh's	17	88	24	45	63.3	1.50
Troy	Rensselaer	Jno. W. Heimstreet	18	83	24, 30	41	62.1	0.15
Germantown	Columbia	Rev. S. W. Roe	17	90				
Garrison's	Putnam	Thomas B. Arden....	5	84	30	40	60.0	2.84
Throg's Neck	Westchester	Miss E. Morris	5, 17	84	30	42	67.0	.....
Deaf and Dumb Inst.	New York	Prof. O. W. Morris	19	83	30	43	64.2	0.78
Columbia College	do	Prof. Chas. A. Joy	17	83	30	44	64.3	0.25
St. Xavier's College	do	Rev. J. M. Aubier....	17	84	30	45	64.0	1.00
Flatbush	King's	Eli T. Mack	19	83	29	46	63.1	1.08
Newburgh.....	Orange	James H. Gardiner	4, 13, 17, 18	80	30	42	62.1	1.87
Minaville.....	Montgomery	Prof. D. S. Bussing	6, 17, 18	76	30	41	60.6	.....
Gouverneur	St. Lawrence....	C. H. Russell	18, 23	83	15	38	59.6	2.76
North Hammond.....	do	C. A. Wooster	18	88	24	36	57.0	1.10
South Trenton.....	Oneida	Storrs Barrows	17, 18	88	27	32	60.4	5.18
Cazenovia	Madison.....	Prof. Wm. Soule	18	89	30	35	59.9	.....
Oneida	do	S. Spooner, M. D.	18, 20	88	30	35	60.2	5.67
Houseville.....	Lewis	Walter D. Yale	18	86	30	32	56.0	2.48
Depauville	Jefferson	Henry Haas	6	88	30	37	60.0	0.57
Theresa	do	S. Gregory						1.97
Oswego	Oswego	Wm. S. Malcolm	18	84	23, 27, 30	42	60.0	2.19
Palermo	do	E. B. Bartlett	6	87	30	33	59.7	2.30
Nichols	Tioga	Robert Howell	6	84	30	35	49.1	.....
Geneva	Ontario	Rev. Dr. W. D. Wilson	20	88	27	41	61.9	0.09
Rochester	Monroe	M. M. Mathews, M.D.	18, 20	85	30	35	60.5	2.28
Rochester University	do	Prof. C. Dewey	18	86	30	36	60.5	2.28
Little Genesee	Allegany	Daniel Edwards	18	88	30	31	51.4	2.02
Suspension Bridge	Niagara	W. Martin Jones.....	20	89	27	35	60.7	1.90
Buffalo	Erie	Wm. Ives	5	87	30	35	62.1	2.35
Averages.....							60.8	1.94
NEW JERSEY.								
Paterson	Passaic	Wm. Brooks.....	5	87	24	42	65.3	0.57
Newark	Essex	W. A. Whitehead	19	83	24, 27	44	64.3	1.23
New Brunswick	Middlesex	Geo. H. Cook	17	84	24	42	64.4	0.34
Trenton	Mercer	E. R. Cook	19	83	15	50	65.0	3.47
Burlington	Burlington	John C. Deacon	19	82	27	45	65.1	1.40

Table showing the range of the thermometer, &c., for September—Continued.

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Table showing the range of the thermometer, &c., for September—Continued.

Stations, &c.	Counties.	Observers.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain.
NORTH CAROLINA.								
				°		°	°	<i>In.</i>
Goldsboro'	Wayne	E. W. Adams, A. M. .	21	91	30	58	74.0	8.75
Oxford	Granville	Wm. R. Hicks, M. D. .	19	86	11, 25	60	72.3	10.00
Raleigh	Wake	Rev. F. P. Brewer. .	19	94	30	50	73.1	1.70
Albemarle	Stanley	F. J. Kron	19	95	25, 30	53	71.9	4.80
Statesville	Iredell	Thos. A. Allison . .	19, 20	90	24	50	67.0	2.00
Asheville	Buncombe	E. J. Aston	19	86	27	53	68.2	.....
Averages .....	.....	.....	.....	.....	.....	.....	71.1	5.45
SOUTH CAROLINA.								
Aiken	Barnwell	John H. Cornish	20	90	1	64	73.0	4.26
Gowdysville	Union	Charles Petty	20	89	25	59	73.1	.....
Averages .....	.....	.....	.....	.....	.....	.....	73.1	4.26
ALABAMA.								
Fish River	Baldwin	W. J. Van Kirk	10, 20, 22	88	30	64	78.2	5.20
Opelika	Lee	J. H. Shields	20	88	1, 25	68	76.1	.....
Green Springs	Hale	J. W. A. Wright	15	91	28	63	77.4	1.77
Averages .....	.....	.....	.....	.....	.....	.....	77.1	3.49
FLORIDA.								
Jacksonville	Duval	A. S. Baldwin	3, 10	93	26	73	80.8	14.60
Port Orange	Volusia	J. M. Hawks, M. D. .	3	88	15	73	80.4	.....
Averages .....	.....	.....	.....	.....	.....	.....	80.6	14.60
TEXAS.								
Columbia	Brazoria	Hennell Stevens	9, 15	94	24, 29	70	79.8	5.64
Waco	McLellan	Edw. Merrill, M. D. .	15	98	24	62	79.6	1.80
Austin	Travis	J. Van Nostrand	30	94	11	65	78.4	6.41
Averages .....	.....	.....	.....	.....	.....	.....	79.3	4.62
MISSISSIPPI.								
Grenada	Yalabusha	Albert Moore	{ 14, 15, 17 18, 19, 27 }	90	23	61	.....	.....
Natchez	Adams	Wm. McCary	20	86	23	66	74.1	2.55
TENNESSEE.								
Tusculum College ..	Greene	S. S. and Rev. W. S. Doak.	19	89	30	55	71.2	.....
Lookout Mountain ..	Hamilton	Rev. C. F. P. Bancroft	20	91	30	62	74.0	.....
Clarksville	Montgomery	Prof. Wm. M. Stewart	19	91	11, 30	52	71.9	0.55
Franklin	Williamson	Jos. M. Parker	19	96	23	54	75.0	0.00
Memphis	Shelby	Edw. Goldsmith	19, 20	92	10, 30	60	75.5	2.23
Averages .....	.....	.....	.....	.....	.....	.....	73.5	0.93
KENTUCKY.								
Chilesburg	Fayette	Sam'l D. Martin, M. D.	17, 18	96	30	44	70.4	1.17
Louisville	Jefferson	Mrs. L. Young	19, 20	95	11, 12	46	72.0	1.00
Averages .....	.....	.....	.....	.....	.....	.....	71.2	1.09
OHIO.								
New Lisbon	Columbiana	J. F. Benner	18	95	28	36	66.3	0.21
Steubenville	Jefferson	Roswell Marsh	20	94	30	43	.....	0.30

Table showing the range of the thermometer, &c., for September—Continued.

Stations, &c.	Counties.	Observers.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain.
OHIO—Continued.				°		°	°	In.
Cleveland	Cuyahoga	Mr. & Mrs. G. A. Hyde	9	88	27, 30	39	63.7	1.38
Wooster	Wayne	Martin Winger	17	92	11, 30	44	68.7	.....
Kelley's Island	Erie	Geo. C. Huntington	17	89	30	47	66.8	0.84
Norwalk	Huron	Rev. A. Newton	5, 16, 18	90	30	37	67.7	0.18
Greenwich	do	M. M. Marsh, M. D.	16	94	30	40	66.5	0.24
North Fairfield	do	O. Burras	17, 18	94	30	42	71.5	.....
Marion	Marion	H. A. True, M. D.	17	89	30	39	64.4	0.61
Toledo	Lucas	J. B. Trembly, M. D.	5	88	27	39	62.4	2.00
Kenton	Hardin	C. H. Smith, M. D.	19	100	10, 13	55	73.7	2.00
Urbana University	Champaign	M. G. Williams	19	91	30	42	68.1	0.32
Hillsboro'	Highland	J. McD. Mathews	20	88	30	42	67.1	0.30
Bethel	Clermont	Geo. W. Crane	19	93	30	40	68.0	0.50
Cincinnati	Hamilton	R. C. Phillips	19, 20	94	11	52	74.4	0.65
College Hill	do	John W. Hammitt	19	97	30	45	72.1	.....
Averages							68.1	0.73
MICHIGAN.								
Monroe City	Monroe	Miss F. E. Whelpley	17	94	30	38	65.7	.....
State Agricult'l Col.	Ingham	Prof. R. C. Kedzie	17	87	30	27	56.6	1.41
Litchfield	Hillsdale	R. Bullard	16, 17	87	30	36	61.9	1.73
Grand Rapids	Kent	E. S. Holmes, D. D. S.	17	91	30	36	64.7	.....
Northport	Leelenaw	Rev. Geo. N. Smith	16	86	26	42	60.0	.....
Otsego	Allegan	Milton Chase, M. D.	19	92	30	40	64.0	.....
Copper Falls	Keweenaw	Dr. S. H. Whittlessey	16	78	29	30	53.2	8.30
Ontonagon	Ontonagon	Edwin Ellis, M. D.	16, 17	89	30	36	56.4	.....
Averages							60.3	3.81
INDIANA.								
Aurora	Dearborn	Geo. Sutton, M. D.	19	97	30	43	71.8	0.88
Vevay	Switzerland	Chas. G. Boerner	19	98	30	42	74.0	0.77
Muncie	Delaware	G. W. H. Kemper, M. D.	17, 19	92	30	40	67.2	0.25
Spiceland	Henry	William Dawson	19	93	30	42	67.5	0.59
Merom	Sullivan	Thos. Holmes	25	89	30	45	69.6	2.70
New Harmony	Posey	John Chappellsmith	19	90	30	50	71.8	0.65
Averages							70.3	0.96
ILLINOIS.								
Chicago	Cook	Samuel Brookes	17	97	30	59	67.6	.....
Do	do	J. G. Langguth, jr.	17	92	11, 30	51	67.9	0.57
Galeonda	Pope	W. V. Eldredge	19	98	22	50	75.7	0.60
Anrora	Kane	A. & E. D. Spaulding	17	88	30	42	63.2	2.54
Sandwich	De Kalb	N. E. Ballou, M. D.	18	91	30	38	63.6	1.80
Ottawa	La Salle	Mrs. E. H. Merwin	19	96	30	44	67.5	0.11
Winnebago	Winnebago	J. W. & Miss Tolman	17	90	30	34	63.4	1.53
Hennepin	Putnam	Smiley Shepherd	17	93	30	37	67.0	.....
Rochelle	Ogle	Daniel Carey	17	92	30	36	64.0	.....
Wyanet	Bureau	E. S. & Miss Phelps	17	91	30	40	68.0	1.36
Tiskilwa	do	Verry Aldrich	16	88	30	36	64.2	.....
Elmira	Stark	O. A. Blanchard	19	90	30	39	65.7	0.82
Peoria	Peoria	Frederick Brendel	19	92	30	45	68.1	0.60
Springfield	Sangamon	G. M. Brinkerhoff	20	98	30	43	67.3	.....
Loami	do	Timothy Dudley	18	94	30	37	69.2	.....
Waterloo	Monroe	H. Künster	18	95	10, 30	53	75.8

Table showing the range of the thermometer, &c., for September—Continued.

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Stations, &c.	Counties.	Observers.	Date.	Max. temp.	Date.	Min. temp.	Mean temp.	Rain.
MISSOURI.								
St. Louis	St. Louis	G. Engelmann, M. D.	18	91	30	45	71.7	0.28
Allenton	do	A. Fendler	19	100	11, 30	41	69.2	0.52
Hermitage	Hickory	Miss Belle Moore ..	4	99	30	41	71.5	0.13
Rolla	Phelps	H. Ruggles	14, 19	91	11	38	61.3	0.26
Harrisonville	Cass	John Christian	29	96	11	46	67.1	5.23
Averages							68.2	1.28
KANSAS.								
Atchison	Atchison	Dr. H. B. & Miss Horn	8	96	10	44	69.1	1.75
Holton	Jackson	Dr. James Watters ..	8	97	6	49	69.4	.....
Council Grove	Morris	A. Woodworth, M. D.	8	96	10	42	69.1	2.35
Baxter Springs	Cherokee	Ingraham & Hyland	13, 14	98	10	40	73.9	0.10
Averages							70.4	1.43
NEBRASKA.								
De Soto	Washington	Charles Seltz	16	93	6	46	66.1	1.82
Glendale	Cass	Dr. A. L. & Miss Child	12	95	9	41	66.5	1.55
Averages							66.3	1.69
UTAH TER.								
Great Salt Lake City	Great Salt Lake	W. W. Phelps	4, 6	86	16, 17, 20	44	67.4	1.07

NOTES OF THE WEATHER, SEPTEMBER, 1867.

Wolfville, Nova Scotia.—September 11.—First white frost.

Gardiner, Maine.—The amount of rain during September was two inches less than the average of the month for twenty-nine years, and the mean temperature was 1.44 below the average. There is no record where the extreme heat of the month has not exceeded the present. On the last day of the month snow fell for an hour, a most unusual occurrence.

Cornish, Maine.—September 30.—Snow fell to-day with rain and hail. On the northerly side of the buildings the ground is white, and close to them the snow is an inch deep. The snow remained on the ground all day close to houses.

Steuben, Maine.—September 15.—Very heavy frost this morning, killing vines.

West Waterville, Maine.—September 15.—Frost, not severe enough to kill vines; none in the garden of the observer. 24th, first frost to nip vegetation generally.

Lisbon, Maine.—September 29.—After a fine, pleasant day, at about midnight, the wind shifted suddenly to the northeast, and a regular northeast storm set in, blowing heavily, accompanied with rain, hail, and snow, lasting till 3 p. m. of the 30th, then northwest wind, blustering, cold, and squally.

South Antrim, N. H.—September 30.—Considerable snow fell with the rain to-day, but it did not lie on the ground.

Claremont, N. H.—September 11.—Slight frost, first of the season.

Randolph, Vt.—September 30.—There have been frequent frosts during the month, but there is still much tender vegetation left untouched.

Craftsbury, Vt.—September 30.—The first snow of the season, only a slight sprinkling.

Worcester, Mass.—September 30.—Slight flurry of snow about 2 p. m.

New Bedford, Mass.—September 30.—No frost yet in this locality.

North Billerica, Mass.—September 15.—Heavy frost last night, killing vines, &c. 20th, maples turning slowly, forests still quite green. 30th, northeast rain storm, a little hail in the morning.

Kingston, Mass.—September 24.—First frost to do any damage.

Georgetown, Mass.—September 30.—Snow fell several times to-day, a few flakes at a time.

Pomfret, Conn.—September 24.—Frost, not a killing one.

Groton, Conn.—September 25.—Heavy squall about 5 o'clock, lasting about fifteen or twenty minutes, with lightning, thunder, and hail.

Rochester, N. Y.—September 24.—Slight frost in and about the city. 30th, the mean temperature of the month is the same as the average of September for thirty-one years. The amount of rain is an inch less than the average.

Newburg, N. Y.—Violent gale in the night of the 23d, doing considerable damage to vessels along the docks.

Troy, N. Y.—September 25.—Slight shower from 3.40 to 3.50 p. m.

New York, N. Y.—September 25.—Thunder shower from 3.40 to 4.35 p. m. from west to east; not much lightning or thunder.

Buffalo, N. Y.—September 24.—Frost reported outside the city. 27th, frost, injuring only the tenderest plants. 30th, the mean temperature of the month was a degree and a half higher than the average for the last nine years. The rain was two inches less than the average for the same period.

North Hammond, N. Y.—September 6.—Hurricane at 4 p. m.; wind and rain with great violence; trees and fences blown down.

Depauville, N. Y.—September 30.—There were frequent showers during the month, but light and of short duration. The drought is now quite severe, most of the streams have ceased to run, and many wells are failing, and in consequence many farmers are digging new or deepening old wells. The occurrence of *aurora borealis* was more frequent than usual; it was observed on every

night from the 19th to the 26th. White frost occurred on three nights, but did no injury to vegetation.

Garrison's, N. Y.—September 25.—Thunder storm from the northwest from 3 to 5 p. m. A heavy gale from the northwest set in at 9½ p. m. and continued through the night, accompanied with a very small fall of rain.

Tioga, N. Y.—September 24.—First hard, killing frost.

Moriches, N. Y.—September 24.—Slight frost, the first this autumn.

Dover, N. J.—September 25.—A storm from the west at 3½ p. m., with lightning and thunder.

Trenton, N. J.—September 25.—Heavy thunder shower and hail storm from northwest at 4 p. m., continuing half an hour.

Newark, N. J.—The quantity of rain was only about one-half the mean of the month in the last twenty-four years, a smaller quantity being recorded in only two Septembers during that period. The mean temperature was nearly half a degree above the average. There was no frost during the month.

Haddonfield, N. J.—September 25.—First frost seen this morning; it did but little damage. A severe hail storm occurred here this afternoon at 4.15, lasting about fifteen minutes. Some of the hail-stones were an inch long and three-quarters of an inch thick, and of the shape of a flattened cone; at one time they covered the ground.

Philadelphia, Penn.—September 25.—At 3.45 p. m., thunder and lightning; at 4.10, a heavy rain commenced, mingled with hail, wind north-northwest. Some of the hail-stones were an inch and a quarter in diameter, generally spherical, some of them flattened; some of them were shaped like rings, filled up with ice in the centre, and some like broken pieces of ice cemented together. The color was generally white; some, however, were as clear as glass. Thousands of window lights were broken during the five minutes of the continuance of the hail. At 4.15 the hail stopped; the rain continued until 4.30 p. m.

Reading, Penn.—September 25.—Clouded over rapidly after 2 p. m. Considerable thunder and vivid lightning. Commenced raining at 3.08 p. m., followed by a remarkable hail-storm. The ground was white with hail-stones, many the size of large walnuts and some much larger. [Drawings of three of them are given on the register.] The storm raged fearfully for five minutes. Wind from northwest, and blew a strong gale at times. Commenced clearing about 4 p. m., wind north, and very cool. Evening clear, cloudless, and almost calm.

Horsham, Penn.—September 25.—Thunder storm from 3.45 to 4.15 p. m.; heavy rain and some hail; hail-stones as large as peas, but not very numerous.

Grampian Hills, Penn.—September ends with the ground exceedingly dry. From the 7th to the 20th there were light showers; the remainder of the month almost without rain. The first frost to sensibly injure vegetation was on the 27th.

Dyberry, Penn.—Several light frosts during the month, which damaged late corn and buckwheat in some places.

Ephrata, Penn.—September 24.—First frost of the season.

Ickesburg, Penn.—September 24.—Frost on rails, low roofs, and timber lying on the ground. Number of days without any frost, 121; that is, from May 25 to September 24, exclusive of both days. Number of days in 1866 without frost, 140, from May 5 to September 23.

Emmitsburg, Md.—September 24.—Light frost this morning.

Cape Charles Light-house, Va.—September 29.—After three very pleasant and nearly calm days, the wind suddenly shifted to the northwest about 11.20 a. m., and at 3 a. m. on the 30th it almost blew a hurricane for about two hours, when it abated to a gale.

Grafton, West Va.—September 27.—First frost.

Attaway Hill, N. C.—September 20.—Severe thunder storm from 5 p. m. to 10 p. m. Trees were struck and shivered at short distances of space and time, and

Delavan, Wis.—September 30.—First frost, injuring vegetation considerably. The month has been very dry; vegetation is dried up, and there is no grass for animals.

Manitowoc, Wis.—September 30.—Thermometer 34° at sunrise; cucumbers frozen, dahlias not.

Waupacca, Wis.—September 30.—First frost to kill garden vegetables.

Sibley, Minn.—September 1.—Slight frost, first of the season.

St. Paul, Minn.—Frost was observed on the morning of the 1st, doing some injury to corn and cucumbers. September 30.—Cranberries are largely drowned out.

Minneapolis, Minn.—September 1.—White frost this morning, the first this season, except a very slight one August 28.

Dubuque, Iowa.—Slight frost on the morning of the 10th and 26th.

Independence, Iowa.—September 6.—A slight frost in some localities this morning, but no injury. 17th, heavy rain from the west at 5 p. m., with thunder and lightning and violent wind, almost a tornado. 30th, a light frost visible on the boards early this morning; vegetation not injured.

Waterloo, Iowa.—September 30.—No frost this month.

Algona, Iowa.—Light frost in the morning on the 6th and 10th; no damage.

Guttenberg, Iowa.—September 10.—Thermometer at 5 a. m. 32° ; frost in low places. 30th, frost killed the corn and pumpkin vines on the prairies.

Fort Dodge, Iowa.—September 6 and 10.—Slight frost, not enough to do any damage. 10th, a swarm of grasshoppers arrived at 1 p. m., and commenced work immediately on vegetables, leaving hardly any buckwheat worth cutting, and stripping the leaves entirely from the corn, so that it looks like sticks stuck in the ground. They came again in additional numbers on the 20th, but are now (at the end of the month) gradually decreasing. They have laid their eggs by millions.

Monticello, Iowa.—September 10.—Very light frost, first of the season; no damage, not even to vines. One hundred and ten days without frost this year; ninety-four days in 1866, and one hundred and thirty-nine days in 1865.

Marble Rock, Iowa.—Frost in low places on the 10th and 30th, but not doing much damage.

Fort Madison, Iowa.—September has been extremely dry; wells are failing, and have been very low all the month. The ground has not been too wet for cultivation since the 4th of July.

Algona, Iowa.—September 20.—Grasshoppers made their appearance in large numbers, and by the 30th had stripped gardens and tender herbage. Corn was too far advanced towards ripening to be much damaged. They seemed to come from the west or southwest.

Atchison, Kansas.—Light frost on the low lands on the mornings of the 10th and 24th, but did no damage.

Council Grove, Kansas.—September 20.—Grasshoppers passing southeast in great numbers, dropping heavily of their numbers on farms and woodland. All seem to be of spring hatching. 26th, laying eggs same as last fall, and eating everything in their reach.

Holton, Kansas.—September 30.—Grasshoppers eating some early sown wheat. They can be seen by millions passing to the southwest. They have done but little injury here thus far.

Glendale, Nebraska.—September 6.—First frost, but so very dry as to do no damage. Sth, thermometer at 11 a. m. 90° , at 2 p. m. 67° , a fall of twenty-three degrees in three hours at midday. 10th, thermometer at 5 a. m. 33° ; frost in low grounds. 15th, from 8 a. m. till 7 p. m. a gale of wind scattering stacks of grain and hay, fences and some slight buildings.